Abstract View

HEMOGLOBIN ADDUCTS AS BIOMARKERS OF MATERNAL AND FETAL TOBACCO SMOKE EXPOSURE

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Cigarette smoking accounts for 30% of all cancer deaths in the United States with most of these deaths occurring from lung cancer. Individuals with inherited variant metabolic enzyme activities might have an altered risk of cigarette smoke induced cancers. Maternal smoking has been associated with DNA damage in the placenta and exposure to tobacco smoke in utero might increase the risk of developing childhood and adult cancers. The goal of this research is to undertake an investigation of the formation of hemoglobin - tobacco smoke carcinogen adducts in maternal blood and correlate materal exposure with fetal exposures. Both maternal blood and fetal cord blood samples for hemoglobin adduct analysis were obtained from women that smoke during pregnancy and from women that are not exposed to cigarette smoke during pregnancy. Stratification of maternal smokers was accomplished by division of patients into three groups (1) nonsmokers, (2) less than 1 pack per day smokers through 2 packs per day smokers, and (3) greater than 2 packs per day smokers. Stratification of nonsmokers and smokers was accomplished by assaying maternal urine for cotinine as well as use of an extensive questionnaire detailing smoking history. Qualitatively and quantitatively characterization of both maternal and fetal hemoglobin adducts to the carcinogens demonstrated a direct correlation between maternal smoking histories and fetal carcinogen exposure. This research will further clarify the utilization of hemoglobin as a biomarker of tobacco smoke exposure and will also elucidate the role that genotype plays in formation of these adducts.

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